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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,178	09/24/2002	Tadashi Takano	SIMTEK6458	6288

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EXAMINER	
MULLINS, BURTON S	
ART UNIT	**PAPER NUMBER**
2834	

DATE MAILED: 07/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/065,178	TAKANO ET AL.	
	Examiner	Art Unit	
	Burton S. Mullins	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *8,9 and 31* is/are withdrawn from consideration.

5)☒ Claim(s) *29 and 30* is/are allowed.

6)☒ Claim(s) *1-7,10 and 11* is/are rejected.

7)☒ Claim(s) *12-28* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of claims 1-30 (Group I) in the response filed 3 June 2003 is acknowledged. Claim 31 is withdrawn from consideration.

2. Claims 8 and 9, directed to the species of Figures 7 and 9 are withdrawn from further consideration since they do not all depend upon or otherwise include each of the limitations of an allowed generic claim as required by 37 CFR 1.141.

Priority

3. Acknowledgment is made of applicant's claim for foreign priority based on two applications filed in Japan on 28 September 2001. It is noted, however, that applicant has not filed certified copies of the two Japanese applications as required by 35 U.S.C. 119(b).

Claim Objections

4. Claim 5 is objected to because of the following informalities: change "comprised" to --comprises---. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a

person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-6 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saito et al. (US 5,878,831) in view of Tanaka et al. (US 5,831,180). Saito teaches an electrically assisted, manually powered unit (e.g., a bicycle; Fig.1) comprising: a manual drive element (pedals 34 and crankshaft 32) receiving a manual input force from an operator; an electric motor 39 for providing an assist force (c.4, lines 9-13); a transmission arrangement (not shown, c.4, line 6) for receiving a driving force from said manual drive element and said electric motor and driving said unit; a force (torque) sensor (not shown) associated with crankshaft 32 for sensing the manual force (torque) applied to said manual drive element and delivering an output signal indicative of said manual force (c.4, lines 28-31; c.5, lines 49-53); a control 41 for controlling the operation of said electric motor (c.4, lines 31-32); said control having a sensor input stage (interface 62) receiving the signal from said force sensor; and a logic for determining the operation of said electric motor from at least said signal from said force sensor (c.5, lines 53-65).

Saito does not teach that the force sensor operates without necessitating "significant displacement" of a component thereof.

Tanaka teaches a torque sensing device that detects torque applied to a rotary shaft. The sensor comprises a core 12 made of magnetorestrictive material and a detection coil 15 wound around the core. When torque is applied to the shaft 11, an electromotive force is induced in the coil according to the strain produced in the coil (abstract, c.6, lines 13-25). No "significant displacement" occurs between the parts of the sensor since the tensile and

compressive forces applied to the magnetorestrictive core are microscopic in nature. Tanaka's sensor is small, highly sensitive and comprises few parts (c.2, lines 39-46).

It would have been obvious to modify Saito and provide a torque sensor per Tanaka since a small, sensitive detector with few parts would have been desirable to detect torque.

Regarding claim 3, strain detection occurs in Tanaka when torque is applied to the right side of the shaft 11 and a compressive force acts on the core (c.4, lines 3-5).

Regarding claims 4-6, the vehicle of Saito is a bicycle with propulsion elements or wheels 21 for propelling the vehicle over terrain.

Regarding claim 10, the crank-shaft of the bicycle of Saito is moveable in two opposed directions.

Regarding claim 11, Saito's motor operates in one driving direction since it is used on a bicycle.

7. Claims 1-5, 7, 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchiyama et al. (US 5,818,189) in view of Tanaka et al. (US 5,831,180). Uchiyama teaches an electrically assisted, manually powered wheelchair comprising: a manual drive element (hand rim 67 and wheel hub 39) receiving a manual input force from an operator (c.5, lines 36-37); an electric motor 105 for providing an assist force (c.6, lines 39-44; Fig.7); a transmission arrangement (c.6, line 56-c.7, line 13; Figs.5&7) for receiving a driving force from said manual drive element and said electric motor and driving said unit; a force or torque sensor comprising a potentiometer unit 91 for sensing the manual force or torque applied to said manual drive element and delivering an output signal indicative of said manual force (c.6, 1-32); a control 98 for controlling the operation of said electric motor (c.6, lines 38-44); said

control having a sensor input stage (interface 133, Fig. 9) receiving the signal from said force sensor 91; and a logic (CPU 134) for determining the operation of said electric motor from at least said signal from said force sensor (c.7, line 60-c.8, line 48).

Uchiyama's potentiometer does not operate without necessitating "significant displacement" of a component thereof, per se.

Tanaka teaches a torque sensing device that detects torque applied to a rotary shaft. The sensor comprises a core 12 made of magnetorestrictive material and a detection coil 15 wound around the core. When torque is applied to the shaft 11, an electromotive force is induced in the coil according to the strain produced in the coil (abstract, c.6, lines 13-25). No "significant displacement" occurs between the parts of the sensor since the tensile and compressive forces applied to the magnetorestrictive core are microscopic in nature. Tanaka's sensor is small, highly sensitive and comprises few parts (c.2, lines 39-46).

It would have been obvious to modify Uchiyama and provide a torque sensor per Tanaka since a small, sensitive detector with few parts would have been desirable to detect torque.

Allowable Subject Matter

8. Claims 12-28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The prior art does not teach the claimed unit comprising, inter alia, an electric motor providing assist force in both directions (claim 12); or a helical spline

connection in the transmission (claim 13); or a compensating sensor that does not experience a load but is in proximity to the force sensor to provide temperature compensation (claim 26).

9. Claims 29-30 are allowed. The prior art does not teach the claimed electrically assisted, manually powered unit including, inter alia, first and second electrical devices providing applied force signals and positioned close enough to each other to experience the same temperature so as to provide a temperature compensated signal to the control input (claim 29).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 305-7063. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 305-1341 for regular communications and 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.

Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
June 30, 2003